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Reciprocal teaching as an instructional strategy to increase reading comprehension

Abstract

The primary focus of this study has been to evaluate the implementation of a new instructional strategy called Reciprocal Teaching. Reciprocal Teaching was designed to improve reading comprehension by teaching students strategies needed to monitor comprehension and construct meaning (Palincsar, 1986). Central Middle School was identified as a School In Need of Assistance (SINA) in 2002 after failing to meet proficiency guidelines established by No Child Left Behind (NCLB) regulations. After being identified as a School in Need of Assistance, Central was required to develop a plan to address curricular areas in which students were not proficient. One area Central specifically needed to target was proficiency in reading comprehension as measured by the Iowa Test of Basic Skills (ITBS). The guidelines for a SINA plan state that the instructional strategy used to increase proficiency must be researched based. Central consulted with Area Education Agency 267 in Cedar Falls, Iowa, and determined that Reciprocal Teaching would best fulfill the SINA plan criteria. Central partially implemented Reciprocal Teaching in the spring of 2004 and included plans for full implementation in their 2004-2005 Comprehensive School Improvement Plan. The research question for this study is: Has the implementation of Reciprocal Teaching been successful at Central Middle School?

RECIPROCAL TEACHING AS AN INSTRUCTIONAL STRATEGY TO INCREASE
READING COMPREHENSION

Submitted
In Partial Fulfillment
of the Requirement for the the Degree
Master of Arts in Education

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Entitled: Reciprocal Teaching as an Instructional
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INTRODUCTION

Purpose

The primary focus of this study has been to evaluate the implementation of a new instructional strategy called Reciprocal Teaching. Reciprocal Teaching was designed to improve reading comprehension by teaching students strategies needed to monitor comprehension and construct meaning (Palincsar, 1986). Central Middle School was identified as a School In Need of Assistance (SINA) in 2002 after failing to meet proficiency guidelines established by No Child Left Behind (NCLB) regulations. After being identified as a School in Need of Assistance, Central was required to develop a plan to address curricular areas in which students were not proficient. One area Central specifically needed to target was proficiency in reading comprehension as measured by the Iowa Test of Basic Skills (ITBS). The guidelines for a SINA plan state that the instructional strategy used to increase proficiency must be researched based. Central consulted with Area Education Agency 267 in Cedar Falls, Iowa, and determined that Reciprocal Teaching would best fulfill the SINA plan criteria. Central partially implemented Reciprocal Teaching in the spring of 2004 and included plans for full implementation in their 2004-2005 Comprehensive School Improvement Plan. The research question for this study is: Has the implementation of Reciprocal Teaching been successful at Central Middle School?

Significance of the Study

As an identified SINA school, Central has to show improvement or cope with further sanctions under NCLB. The findings of this study will benefit Central by determining if Reciprocal Teaching has been successfully implemented, thereby directly impacting reading comprehension scores. If Reciprocal Teaching does not have the desired impact, then Central will have to inquiry about other strategies or techniques that may help them meet the levels of

proficiency mandated. As more schools are identified as SINA schools, studies like this will show which research-based strategies have been successful in assisting students in becoming proficient and meeting the requirements for NCLB.

Limitation of the Study

A limitation of the study would be the number of participants in two of the instruments. The peer observation study which focused on the degree of teacher/student interaction only had three participants and focused mainly on one teacher out of 30 faculty members who were involved in the initial Reciprocal Teaching training. This study is also limited because only three observations were made of the individual teacher. The student interviews were also limited to three 7th grade students due to the time constraints of conducting interviews.

LITERATURE REVIEWS

Introduction

Two specific bodies of literature provided the theoretical framework for the study. The first was largely concerned with Reciprocal Teaching and the improvements in achievement that can be obtained by effectively utilizing Reciprocal Teaching strategies. The research demonstrates that Reciprocal Teaching can be successful with children at almost any grade level or cognitive ability. The second body of literature was concerned with peer coaching, an important component of Reciprocal Teaching, and the resulting impact on instructional effectiveness when teachers learn to analyze their teaching through self-reflection and collegial support.

Reciprocal Teaching

Definition

Reciprocal Teaching refers to the instructional activity that takes place in the form of a dialogue between teachers and students regarding segments of text (Palincsar, 1986). The dialogue is structured by the use of four strategies: summarizing, question generating, clarifying, and predicting. Each of these strategies was selected as a means of aiding students to construct meaning from text as well as a means of monitoring their reading to ensure that they in fact understand what they read. The teacher and students take turns assuming the role of teacher in leading this dialogue. Palincsar states that the purpose of Reciprocal Teaching is to facilitate a group effort between teacher and students as well as among student in the task of bringing meaning to the text.

Klinger and Vaughn (1996) offered the following description of Reciprocal Teaching. The teacher models use of the four strategies by “thinking aloud” as he/she reads through text. The teacher then leads students in a text-related discussion, assisting them in strategy used and gradually withdrawing support as it is no longer necessary. As students become more proficient at applying the strategies, they take turns being the “teacher” and lead discussions about text content.

Benefits

The structure of the dialogue and interactions of the group members during Reciprocal Teaching require that all students participate and foster new relationships between students of different ability levels (Palincsar, 1986). Reciprocal Teaching has been successful in improving comprehension for students who can decode but have difficulty with comprehension testing. The strategy has been shown to work with learning disabled students as well as English as second language learners (Klinger & Vaughn, 1996). A study by Lederer (2000) dealt with the

effectiveness of Reciprocal Teaching strategies on reading comprehension scores of learning disabled students in inclusive social studies classrooms. Participants of this study were 128 fourth, fifth, and sixth grade students. Post assessment results indicated that students improved their performance on comprehension assessments compared with students in the control groups. This study provides encouragement that Reciprocal Teaching is a practical strategy which can successfully be used to teach students of varying abilities and learning styles.

Reciprocal Teaching recognizes that cognitive development occurs when concepts first learned through social interactions become internalized and made one's own (Klinger & Vaughn, 1996). Reciprocal Teaching encourages students' self-directed prediction, clarification of information not completely understood as the text is read, generation of questions about the content, and summarization of material covered (Lysynchuk, Pressley, & Vye, 1990).

Modifications to Reciprocal Teaching

Marks, Pressley, & Coley (1993) studied three teachers who made modifications to conventional Reciprocal Teaching. The purpose of their study was to develop a model of Reciprocal Teaching which would provide a practical version that could be easily used in classrooms. These teachers used conventional Reciprocal Teaching as a starting point for creating instruction they believed to be more powerful than conventional Reciprocal Teaching and more effective in meeting their goals. The teachers' modifications included: utilizing Reciprocal Teaching as a post-reading activity, modifying student leader roles to stimulate greater participation, and extending Reciprocal Teaching over a much longer period than previously studied. In contrast, conventional Reciprocal Teaching includes: use of the strategy during the first reading, student leader roles change often during each session, and no assigned roles.

Peer Coaching

Definition

Peer Coaching is a process through which two or more professional colleagues work together to: reflect on current practices; expand, refine and build new skills; share ideas; teach one another; conduct classroom research; or solve problems in the workplace (Robbins, 1991). Teachers participate in common goal-setting and increased teacher interaction (Hyman, 1990). The four basic principles of peer coaching are: (1) all teachers are members of teams, (2) verbal feedback is omitted, (3) the person doing the teaching is the “coach” and the one observing is the “coached,” and (4) the collaborative work goes beyond the observations (Showers & Joyce, 1996). Training for peer coaching is crucial to the process. Showers & Joyce (1996) suggested four training components: (a) developing understanding of the rationale for peer coaching, (b) demonstrations, (c) simulated practice, and (d) analysis of the simulations.

Benefits

Peer Coaching, when used as part of staff development, can reduce the isolation of teachers (Swafford, 1998). It focuses on changing staff development which in turn drives school improvement. Regularly scheduled peer coaching interactions greatly increases the likelihood that content taught during staff development will actually be used in the classroom. Teachers who received support practiced new skills and strategies more frequently and applied them more appropriately than teachers who did not receive support (Showers & Joyce, 1996). By using peer coaching, teachers become engaged in self-reflection and gain more control of their future teaching successes.

Sparks & Bruder (1987) conducted a peer coaching project at two Ann Arbor, Michigan public schools in 1985. The basis for the study was to determine the effects peer coaching had on the following areas: improving collegiality, encouraging use of new strategies, and enhancing

teaching effectiveness. Teachers opening their classrooms doors to one another and feeling rewarded by the experience were evidence of the project's success. An increase in the implementation of new strategies was observed. Teachers also felt a positive impact on students as observed through more attentiveness and active engagement during lessons.

Limitations

Hyman (1990) outlined areas of weakness with the peer coaching concept. Premise one is that teachers can learn skills needed for peer coaching. The assumption is that time is available for training, which often is not the case. In order to strengthen the use of peer coaching, adequate time must be offered. Premise two is that those in control of schools will permit change to take place. Premise three is the potential to use information gained during peer coaching as part of a formal evaluation. Hyman cautions against this practice and recommends keeping peer coaching a non-evaluative process.

Peer coaching is but one dimension in the realm of school improvement. Simply forming peer coaching teams will not affect the learning environment of students. The study of teaching and curriculum within these teams must be the focus (Showers & Joyce, 1996).

METHODS

Introduction

As part of Central's 2004-2005 Comprehensive School Improvement Plan, Central has implemented Reciprocal Teaching as part of their professional development component. The research question for this study was: Has the implementation of Reciprocal Teaching been successful at Central Middle School? To determine the level of success, data was collected from four sources: classroom-based action research, surveys, student achievement analysis and interviews. A Modified Flanders Interaction Analysis was used to determine the degree of success individual teachers were having in moving the direction of their teacher/student

interaction from teacher led to student led, which is a key concept in Reciprocal Teaching. Peer coaching, another integral part of Reciprocal Teaching, was used to gather this information. Survey data was collected from parents to determine their knowledge of Reciprocal Teaching as implemented at Central Middle School. It was hoped that through awareness of teaching strategies parents would become more supportive of their child's education. Data from Target Teach, the district assessment tool, was collected for concrete evidence that student's reading comprehension scores were increasing, which is an overall goal of their school improvement plan. Interviews provided insight into the personal impact Reciprocal Teaching was having on students, as measured by their attitudes and perceptions of the strategies being implemented.

Setting

Central Middle School is one of four middle schools in the Waterloo Community School District in Waterloo, IA, a working-class urban area. Central Middle School has an enrollment of 795 students; 30% of those students are minority students and 59% of those students are on free or reduced meals. Within Central's population the following four subgroups are present: African American males, English Language Learners, special education students, and low socio-economic students. Central became a School In Need of Assistance for two reasons: (1) failure to meet federal guidelines on the ITBS scores, and (2) not meeting the guidelines for the number of students tested. Central had tested less than 96% of their students. The majority of Central's students are bussed. It is hard for students and parents to develop close relationships with peers, build community, and feel ownership of their school.

Participants

Teachers

Three teachers participated in a classroom-based action research project. One teacher was observed while two other teachers recorded their observations. Each participant took part in Reciprocal Teaching staff development which included limited training in peer coaching.

Parents

The participants in the survey were 100, 6-8 grade parents randomly selected to complete a survey about their knowledge of Reciprocal Teaching at Central Middle School. The surveys were sent home with students of the selected parents.

Students

The participants in the student achievement analysis were the 2004 8th grade class at Central Middle School. 225 Central 8th grade students took the 2004 Fall Target Teach pretest. In 2002, they took the test as 6th graders. In 2003, they took the test as 7th graders. The three seventh-grade participants in the interview were students at Central Middle School during the initial training phase.

Instruments

Modified Flanders Interaction Analysis

Peer to peer observation was used to collect the data for this analysis using a Modified Flanders Interaction Analysis Data Table data collection tool (Appendix A). The modified Flanders table categorizes teacher/student interaction in three categories: indirect teacher talk, teacher talk, and student talk with tally marks recorded when communication is exhibited in one of the categories. This analysis enables teachers to self-analyze and become aware of teaching personality, techniques, and effectiveness.

Survey

The parent survey consisted of 15 questions (Appendix B). A survey was given to a teacher associate at Central to check for question comprehension and clarity. A reading coach at Central also previewed the survey, checking for clarity and gender bias. The survey questions were designed to determine if parents were familiar with the reading comprehension strategies that are part of Reciprocal Teaching: questioning, predicting, visualizing, summarizing, small group collaboration, and teacher collaboration. Three questions addressed homework and parent involvement. Five questions addressed strategies used in Reciprocal Teaching. Five questions addressed Reciprocal Teaching terminology and communication to parents. Two questions addressed teacher collaboration. The surveys were sent home with students so responses were limited by the number of students who choose to return their surveys to their teacher.

Target Teach

Target Teach is part of the district wide reading curriculum for the Waterloo Schools implemented in the spring of 2001. It is a purchased curriculum that has been adapted by a curriculum coordinator and a committee of reading teachers. The Target Teach curriculum is used by all reading teachers at Central Middle School. The pretest for Target Teach is given every Fall during the first week of school, with four incremental tests given throughout the school year. All tests are written in ITBS format and scored electronically. A sample pretest is shown in Appendix C. The pre-and-post tests consist of 105 questions covering 26 district reading objectives. The posttest is administered in May. The purpose of this study was to compare the scores of the Fall 2004 Target Teach pretest scores to the Fall 2002 and the Fall 2003 pretest scores to determine if the implementation of strategies to improve reading comprehension scores has made a difference in reading comprehension test scores.

Interviews

A nine question interview protocol was developed covering the Reciprocal Teaching topics of Clarifying, Questioning, Predicting, Summarizing, and Visualizing. The interview questions are included in Appendix D. The questioning started out with open-ended questions and concluded with closed-ended questions. The purpose of the interview was to discover how much exposure the students have had to Reciprocal Teaching. Students participated during a computer lab time or during a student news program during lunch, thereby avoiding pulling them out from classes.

Procedures

Modified Flanders Interaction Analysis

A teacher was observed during a fifteen minute lesson using a modified Flanders Interaction Analysis Data Table data collection tool. Tally marks were recorded in three categories of teacher interaction, indirect teacher talk, direct teacher talk, and student talk. Percentages were calculated to determine the amount of time spent in each category of interaction. There were two initial observations, with two different peer coaches, followed by debriefing with peer coaches. Individuals reflected with coaches to identify strengths and weaknesses and pinpoint an area to change. The reflection log provided as part of the initial Reciprocal Teaching training was used as documentation of the process (Appendix E). After reflection, peer coaches decided and implemented a course of action in the classroom with follow up observations.

Survey

A total of 100 surveys were randomly distributed to parents of Central Middle School 6-8 grade students. Surveys were handed out in sealed envelopes during a class on a Monday morning. A note explaining the purpose of the survey was attached to the survey. Parents were asked to return the survey to one of the teachers noted by Friday of the same week. The following distribution was used: 50 surveys were sent home with male students and 50 surveys were sent home with female students, of those, 30 surveys were sent with 6th graders, and 70 surveys were sent with 7th and 8th graders.

Target Teach

225 Central 8th grade students were administered the 2004 Fall Target Teach pretest during their reading class, by their reading teacher. The students answered 105, ITBS formatted questions covering 26 district reading objectives. The pretest was then scored electronically. The same procedure was followed when the pretest was administered to this group in 2003 as 7th graders and in 2002 as 6th graders.

Interviews

Three seventh grade students were chosen as interviewees. The researcher interviewed Student A on Friday, September 24, 2004 in Central's computer lab during lab time in 3rd hour Computer Exploratory. The researcher interviewed Student B on Friday, September 24, 2004 in Central's computer lab during lab time in 4th hour Computer Exploratory. The researcher interviewed Student C on Friday, September 24, 2004 in the researcher's classroom during the student's Channel One time. Channel One is a daily news program that all students watch before going to lunch. Each interviewee was asked nine questions covering the Reciprocal Teaching topics of Clarifying, Questioning, Predicting, Summarizing, and Visualizing. Responses were recorded on an interview collection sheet by the researcher (Appendix F).

RESULTS

Introduction

The Modified Flanders Interaction Analysis shows evidence that the observed teacher was making progress in transitioning his or her classroom to a more student-led environment as shown by both percentage increases in the amount of student talk and percentage decreases in the amount of direct teacher talk during the post observation. The survey indicates parents support the homework but do not have a complete understanding of Reciprocal Teaching. An increase in reading comprehension scores is presented in the student achievement testing results. The interviews confirm that students are retaining some of the Reciprocal Teaching strategies and that students are using the terminology associated with Reciprocal Teaching.

Modified Flanders Interaction Analysis

The tally marks collected on the Modified Flanders Interaction data table were totaled. The percentage of tally marks of indirect teacher talk, direct teacher talk, and student talk were calculated to determine the amount of time spent in each of these three categories of interaction. Using the information found in the Categories for Analysis of Teacher Interaction, strength and weaknesses were identified (Appendix G). The process was then repeated during a post observation. Due to time constraints and scheduling conflicts, the post observation was conducted by only one colleague. The results of the Modified Flanders' Interaction Analysis Data Table are summarized in Table One.

Table 1

Modified Flanders' Interaction Analysis

Observer	# Tallies	% Indirect	% Direct	% Student
1-Pre	58	27	29	24
2-Pre	63	26	33	22
3-Post	51	37	23	31

Survey

Of 100 surveys 53 were returned. The 6th grade returned 12 out of 30 or 40%. The 7th grade returned 22 out of 35 or 73%. The 8th grade returned 19 out of 35 or 63%.

According to the survey answers for questions 1, 5, 6, parents are monitoring homework at least 3 days on the average. Parents are being supportive of homework as evidenced by a mean score of 6.2 on a scale of 1-7 for question number 1. However, there appears to be room for improvement in how focused parents' homework discussions are with their child. Parents should be encouraged by their child's teacher to have discussions about what their child is reading centered around the skills of predicting, summarizing, and creating mental images. These discussions are taking place on a very limited basis as evidenced by a low response to Question 2 asking parents about the number of teachers discussing Reciprocal Teaching with them.

According to answers for survey questions 8, 9, 10, 11 and 12, there is some evidence that Reciprocal Teaching strategies are being taught in the classrooms and assimilated by students in all three grades. Parents were able to recognize when their child was using a specific strategy, for example summarization, even if they did not have awareness that summarization was a Reciprocal Teaching strategy. According to the survey answers for questions 2, 3, 4, 7, and 15 parents do not recognize the terms related to Reciprocal Teaching. When asked directly about

Reciprocal Teaching, the mean response was lower than when the parents were asked about a specific strategy component. Specific responses to questions 2 and 4 directly relate to communication between school and home. The responses indicate room for growth in providing information about Reciprocal Teaching to parents from teachers. Answers to survey questions 13 and 14 reflect the belief by parents that teachers should work together as teams and plan together (See Appendix H for the mean scores reported on a continuum for each response). Table Two reports the mean score for each survey question along with the response scale of the question.

Target Teach

The median score increased by 3% from 2002 to 2003. The median score increased by 1% from 2003 to 2004. The total gain in reading comprehension median scores over two years was 4%. This indicates a small but consistent growth in the median scores in reading comprehension over three years. The range score decreased by 19% from 2002 to 2003. The range score decreased by 13% from 2003 to 2004. The total decrease was 32% indicating the gap between the low end and the high end appears to be closing.

The following section is a summary of the trend data collected for the Target Teach pretest measuring reading comprehension. A score of 41% is considered to be proficient in reading comprehension by the Waterloo Community School District. In 2002, there were 10 reading classes tested with a median score of 52 and a range of 52. In 2003, there were 10 reading classes tested with a median score of 55 and a range of 33. In 2004, there were 10 reading classes tested with a median score of 56 and a range of 20 (See Table Three for summary of median data).

Table 2

Mean Scores of Survey Questions

Question Number	Mean	Lickert Scale
1 H- Time spent discussing homework with child	6.2	1-7
12 RT- I have seen evidence of my child trying to continue to make sense of difficult text	5.5	1-7
13 TC- I believe teachers should work together	5.0	1-5
14 TC- I have seen evidence of teacher collaboration	5.0	1-5
3 P- My understanding of Reciprocal Teaching	4.8	1-11
2 P- I have heard about Reciprocal Teaching	4.7	1-9
15 P- Reciprocal Teaching can enhance my child's learning	4.6	1-11
6 H- I talk to my child about books	3.9	1-5
5 H- My child asks me questions about homework	3.7	1-5
7 P- My child has discussed Reciprocal Teaching with me	3.5	1-7
11 RT- I have seen evidence of summarizing	3.3	1-5
8 RT- My child has talked about working in small groups	2.6	1-5
9 RT- My child talks about making mental pictures	2.6	1-5
10 RT- My child predicts what will happen while reading	2.6	1-7
4 P- Number of teachers discussing Reciprocal Teaching	2.2	1-7

H= homework and parent involvement, RT= strategies used in Reciprocal Teaching, P=Reciprocal Teaching terminology and communication with parents, T= teacher collaboration

Table 3

Summary of Target Teach Trend Data

	2002 Target Teach Pretest	2003 Target Teach Pretest	2004 Target Teach Pretest
Median	52	55	56
Range	52	33	20

Interview

Question one asked students to describe working in small groups. All three students interviewed were able to share about small group work they had experienced at Central Middle School. Their descriptions of group work emphasized the interactions that were going on between group members. One student responded that she sometimes finds herself trying to get people to talk and cooperate during group work. Another student described group work as talking to each other and making suggestions to each other. The students also stated that they are sometimes assigned roles and told their responsibilities during group work.

Questions two, five, and six dealt with the students' ability to generate questions. The interviewees were able to identify the three different types of questions literal, inferential, and personal questions and provide definitions of the question types. All three students responded that literal questions are easier to answer because they are the "right there" questions. Two students believed that inferential questions were easier to ask while one student thought personal questions were easier to ask.

Question four related to how teachers help students to understand/clarify the information presented to them. All three students described a further interchange of information between the student and the teacher to help in the understanding of information. The interchange was most

likely in the form of clarifying questions by either the teacher or the student until understanding was obtained by the student.

Questions three, seven, eight and nine asked the interviewees to describe their approaches to reading. All three students agreed that past experience was important to their learning and they use past experience to make sense of new learning. The students all use the technique of making mental pictures while reading with two students comparing it to making a movie in their mind as they read. All three students made reference to the text book reading as being more difficult, and mentioned that they were required to memorize and take notes of text books. The three students were able to describe a procedure that they used for summarizing what they had read by taking a few important parts and agreeing upon 1-2 sentences that stated the main idea.

DISCUSSION

Introduction

Has the implementation of Reciprocal Teaching been successful at Central Middle School? The study does reflect utilization of Reciprocal Teaching strategies at Central Middle School, however, the limited number of participants make it difficult to determine usage of Reciprocal Teaching building wide. The level of implementation of Reciprocal Teaching at this time can be described as partial implementation.

The Modified Flanders Interaction Analysis indicated the interaction between teacher/students was progressing from teacher-directed to more student-led conversations. The participant in this study saw a decrease in the amount of direct teacher talk from 33% pre observation to 23% post observation and an increase in direct student talk from 22% pre observation to 31% post observation. Part of the increase in direct student talk can be attributed to the teacher making conscious effort to allow more student conversations, as they knew this

was something that was being looked for by the observer. During the study, time was a factor in the choice of participants. Peer coaching requires a fairly sizeable time commitment to be carried out properly. Staff members involved need to have the time to visit other classrooms to observe and to have enough time for debriefing and follow-up conversations to take place. The participants for this study were not given extra time for peer coaching but instead were expected to use their planning times. Modified Flanders Interaction Analysis indicated progress in more student led classroom conversations. A big factor in changing the dynamics of a classroom and for some teacher's giving up a perception of control to students is having a support network.

The parent surveys indicated communications from school to home about Reciprocal Teaching strategies had not been very effective. This gap is most likely to be even wider than revealed through the survey because of 53% response rate. The research indicated that Central Middle School parents are taking an active role by at least discussing their student's homework an average of 3 days a week. At this point in time, the survey reveals from the parents' perspective attempts to becoming actively involved by at least discussing homework. The responsibility for finding ways to increase that involvement lies with the staff and administration of Central Middle School. Central Middle School has not taken enough tangible measures to promote support of Reciprocal Teaching by parents. One recommendation would be to define and explain the strategy through the school newsletter. Another recommendation would be for students to document discussion of the strategy at home through reading logs. Moreover, parents could be invited to demonstrations of the strategy in use during family reading nights.

The student achievement analysis indicates an increase in reading comprehension scores. Reading comprehension scores are closely monitored across the Waterloo district. The three-year Target Teach trend data shows a median increase from 52% in 2002 to 56% in 2004 with 41%

considered proficient in reading comprehension. The median score increased by 3% from 2002-03. The median score increased by 1% from 2003-04. The total gain in reading comprehension median scores over two years was 4%. Although there appears to be consistent growth in the median scores, it is a small growth. The upward trends are promising to Central Middle School after being identified as a School in Need of Assistance. However, at this time it is difficult to specifically determine which has impacted students' reading comprehension scores more, Target Teach or Reciprocal Teaching. The gain is small enough that either one of the innovations alone or combined could have caused the gain. New innovations should be given at least three to five years in order to truly measure their effectiveness. In order to be removed from the SINA watch list, Central's reading comprehension scores must increase. The fact that there are gains in reading comprehensions scores means that either Reciprocal Teaching or Target Teach or both of these strategies are working for some students and should be continued.

In order for any strategy to be successful for a student, they must take ownership of the strategy. Three, seventh grade students were interviewed about their understanding of the Reciprocal Teaching strategy and their usage of a common language to explain Reciprocal Teaching. It is evident from the interviews that students who were exposed to Reciprocal Teaching last Spring are retaining some of that knowledge base. All three students remembered Reciprocal Teaching activities from last year. Two of the students directly recalled classes from last year that had used Reciprocal Teaching. These same students did not feel that they were doing as much with Reciprocal Teaching this year. One student could give a detailed example of a Reciprocal Teaching activity he had been exposed to the day before the interview. The second part of the interview was to discover if students were using a common language when talking about Reciprocal Teaching. During the interviews, it was evident that students were using

terminology associated with Reciprocal Teaching and were able to provide definitions of literal, inferential, and personal questions. In addition to explaining the three question types, the students interviewed were able to share what they know about predicting, summarizing, clarifying, and visualization. The student interviews are evidence that Reciprocal Teaching is taking place because randomly selected students were able to identify key concepts of the strategy. Reading comprehension scores are increasing, and as stated in the recommendations for Student Achievement, it is hard to separate the contributor to the gains as either Reciprocal Teaching or Target Teach. Each strategy should continue as a means of reaching as many students as possible with ideas that they can monitor their own comprehension and seek to construct meaning of what is being read.

Future Research

Further qualitative and quantitative studies with a larger number of participants would provide a truer picture of Reciprocal Teaching at Central Middle School. The following section outlines follow-up studies that should be conducted.

Only three participants were used in the original Modified Flanders Interaction Analysis study. The study should be conducted again with a larger number of participants to determine the consistency of time that students are allowed to lead classroom discussions. In other words, are student-led conversations the norm at Central, and not just being utilized because the teacher is trying make the observation look good?

A second parent survey should be conducted at a time when parents can sit down and fill them out at school, during open house or conference times. By gathering information from a larger sample, a truer picture of parent involvement will emerge.

The effect of Reciprocal Teaching on reading comprehension could be isolated from other district strategies, such as Target Teach, by following a randomly selected group of students in a teacher's class who is trained in Reciprocal Teaching, collecting the data and comparing it to the data collected on a class taught by a reading teacher not trained in Reciprocal Teaching. Both teachers in this study would have been trained and using the Target Teach curriculum.

Individual teachers could also be interviewed as to how much and how exactly they are using Reciprocal Teaching. If a teacher is not using Reciprocal Teaching, then it needs to be investigated why he or she is not using it. Is it due to lack of training or the teacher being unsure how to use the strategy in a non-content area class?

Since the interviews were conducted with a limited number of participants, a follow up survey asking randomly selected students what they remember about Reciprocal Teaching and whether they are using it this year may help to clarify how widespread the use of Reciprocal Teaching is at Central Middle School. This survey may also explain the student's responses that suggested they are not doing much with Reciprocal Teaching this year

Conclusion

This study indicated the promising benefits Reciprocal Teaching could have on increasing reading comprehension skills if fully implemented by all teachers at Central Middle School. The Modified Flanders Interaction Analysis showed the interaction between teacher/student was progressing from teacher-directed to more student-led conversations, a major premise of Reciprocal Teaching. The survey indicated that there is room for improvement in parental involvement in regards to Reciprocal Teaching; however, evidence was presented that showed parental involvement with homework. The student achievement analysis showed an

increase in reading comprehension scores, which is a Waterloo district wide goal. Interviews verified that students who have been exposed to Reciprocal Teaching are taking ownership of the strategy by being able to explain the strategy using the common language of Reciprocal Teaching.

In order for Reciprocal Teaching to be fully implemented, several barriers need to be addressed. While teachers need to be held accountable for using the strategies in their classrooms, they also need to be highly supported as a new strategy is implemented. Administrators need to be supportive of Reciprocal Teaching. The administrative team did not receive the same level of training as faculty, yet they should be able to identify Reciprocal Teaching strategies during walk throughs. Peer coaching, which can support Reciprocal Teaching, was under utilized last year because of lack of proper training of the faculty. More formal training in peer coaching is necessary to further develop this support network. The formalized training should lead to observations and debriefings that are more meaningful. The administrative team needs to promote collaborative efforts by allowing time for peer-to-peer interactions to occur. There needs to be on-going staff development in Reciprocal Teaching and Peer Coaching for those already trained and opportunities for the training of those new to the staff.

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APPENDIX A

Interaction Analysis Data Table

Category	Tally Marks	No. of Tallies	% of Tallies
1. Accepts Students Feelings			
2. Gives Praise to Students			
3. Responds to Student Query			
4. Question is asked			
5. Lecture			
6. Giving Directions			
7. Criticize Student Behavior			
8. Student Responds to Teacher			
9. Student Initiates the Talk			
10. Silence or Confusion			
11. Calls on boy			
12. Calls on girl			

Indirect Teacher Talk

Direct
Teacher
TalkStudent
Talk

Other

APPENDIX B

Central Middle School Reciprocal Teaching Questionnaire – Parents

1. I spend time discussing homework with my child.
daily ____ 2 to 3 days per week ____ once a week ____ never ____
2. I have heard about Reciprocal Teaching
____ from my child ____ from the school newsletter ____ from school posters ____ other (write on back)
3. My understanding of Reciprocal Teaching is
____ very clear ____ somewhat clear ____ a little fuzzy ____ I don't understand Reciprocal Teaching
____ I haven't heard about Reciprocal Teaching
4. How many teachers have discussed Reciprocal Teaching with you?
____ 1 ____ 2 ____ 3 or more
5. My child asks me about his/her homework.
A lot ____ A little ____ Not at All ____
6. I talk to my child about the books she/he is reading.
A lot ____ A little ____ Not at All ____
7. My child has discussed Reciprocal Teaching strategies with me.
A lot ____ A little ____ Not at All ____
8. My child has talked about working in small groups within the classroom.
A lot ____ A little ____ Not at All ____
9. My child talks about making mental pictures when he/she reads.
A lot ____ A little ____ Not at All ____
10. My child predicts what will happen to the characters in her/his novels.
A lot ____ A little ____ Not at All ____
11. I have seen evidence of summarizing either verbalizing or writing.
A lot ____ A little ____ Not at All ____
12. I have seen evidence that if my child is having difficulty understanding what he/she is reading, my child will continue to try to make sense of what he/she is reading.
A lot ____ A little ____ Not at All ____
13. I believe teachers should work together to provide the best education for my child.
A lot ____ A little ____ Not at All ____
14. I have seen evidence of teachers planning and working together.
A lot ____ A little ____ Not at All ____
15. Reciprocal Teaching can enhance my child's learning.
____ Strongly Agree ____ Agree ____ Neutral ____ Disagree ____ Strongly Disagree

In the last year I have attended: a conference ____ and Open House ____

My student is in grade 6 ____ 7 ____ 8 ____

My student is: Male or Female

Father works: 1st shift ____ 2nd shift ____ 3rd shift ____

Mother works: 1st shift ____ 2nd shift ____ 3rd shift ____

Father's education: GED/HS ____ Year of College ____ Other ____

Mother's education: GED/HS ____ Year of College ____ Other ____

APPENDIX C

Sample page: Target Teach Test

32. What makes a camel capable of retaining water?

- A. the large hump on its back in which it stores water
- B. the special water pockets in its stomach
- C. the unusual oval shape of its blood cells
- D. the fat in its hump

33. The reason a camel needs sweat glands to survive in the desert is because

- A. they help the camel evaporate the condensed water on its skin.
- B. they help the camel store water in its hump.
- C. they help the camel keep cool in the desert.
- D. they help the camel stay warm in the desert.

Read the following poem and then answer the questions.

From "The Barefoot Boy"
by John Greenleaf Whittier



Blessings on thee, little man
Barefoot boy, with cheek of tan!
With thy turned-up pantaloons,¹
And thy merry whistled tunes;
With thy red lip, redder still,
Kissed by strawberries on the hill;
With the sunshine on thy face,
Through thy torn brim's jaunty grace,
From my heart I give thee joy,
I was once a barefoot boy.



¹ pants

34. How does the poet feel about the barefoot boy?

- A. The poet feels affection for him.
- B. The poet feels jealous of him.
- C. The poet feels annoyed by him.
- D. The poet feels blessed by him.

36. Which words does the speaker use to express the boy's feelings?

- A. barefoot, tunes, sunshine
- B. pantaloons, strawberries, hill
- C. merry, jaunty, joy
- D. cheek, lip, heart

35. How does the barefoot boy feel in this poem?

- A. blessed
- B. happy
- C. adventurous
- D. foolish

37. The barefoot boy can best be described as

- A. carefree and lonely.
- B. lighthearted and content.
- C. sneaky and deceitful.
- D. old and foolish.

APPENDIX D

Student Interview

Initial Questions

1. Tell me about working in small groups. *Q, P, C
2. Tell me what you know about questioning. *Q
3. How important is past experience when learning. *P, V
4. How do your teachers help you understand/clarify the information presented? *C, P, Q, V
5. Tell me some of the things you think about when you're reading a novel? *C, P, Q, V, S
6. How is your thinking different when you read nonfiction or your social studies or science textbook? *C, P, Q, V, S

Follow up questions

1. Have any of your teachers talked to you about Reciprocal Teaching? How often and in what situations? *C, P, Q, V, S
2. What are the three types of questions in Reciprocal Teaching? Can you explain them and tell me if/when you use them? Or Do you know about literal, personal, and inferential questions? *Q, S
3. What classes have you heard the following terms in? clarify, predict, and summarize?
4. When have you used these strategies or heard these terms, last spring or at the beginning of this school year, or both?
5. Have you noticed the Reciprocal Teaching posters anywhere in the building?

*denotes specific Reciprocal Teaching strategy: Clarify, Predict, Question, Visualize, Summarize

APPENDIX E

Reciprocal Teaching

Implementation Log

Implementation Information:

- ☐ I am using this log to plan or record notes for my lesson.
☐ I am using this log as I observe my peer coaching partner: _____
☐ I am using this log as I observe a live or videotaped demonstration during staff development: _____

Date: _____

School: _____

Name: _____

Grade Level/Role: _____

Reciprocal Teaching Strategy (circle one):

Questioning

Summarizing

Clarifying

Predicting

Visualizing

Title of Book Used: _____ Fiction / Non-fiction

Author(s): _____ Pages: _____

Implementation Data:

In the last week:

...I have worked with my peer coaching partner to **plan and rehearse** a Reciprocal Teaching strategy _____ times?

...I have **demonstrated** a Reciprocal Teaching strategy (with students) _____ times for my peer-coaching partner?

...I have **used** Reciprocal Teaching with students _____ times.

...I have used Reciprocal Teaching in the following **subjects**:

Complete a log on the following Tuesdays

3 / 9

4 / 6

5 / 4

3 / 23

4 / 13

5 / 11

3 / 30

4 / 20

5 / 18

4 / 27

5 / 25

APPENDIX E

1. Concepts addressed from content area:

2. Planning: Organization of the lesson:

Steps I'll take/I observed:

3. Reflections on attributes of Reciprocal Teaching (about my own lesson)

+ *This worked well....* *Strengths of the lesson*

Δ *I'd like to do over...* *Areas for refinement*

! *I noticed...* *Observations*

4. I need:

APPENDIX F

Name _____ Date _____

Clarify Question Predict Summarize Visualize

Questions for students:

Q 1. Tell me what you know about questioning?**P,C** 2. How important is past experience when learning?**C,V** 3. How do your teachers help you understand/clarify the information presented?**Q** 4. What kinds/types of questions are easier to answer?**Q** 5. What kinds/types of questions are easier to ask?**P,C,
S,V** 6. Tell me some of the things you think about when you're reading a novel.**C,S,V** 7. How is your thinking different when you read nonfiction or your social studies or science textbook?**S,V** 8. How do you summarize what you have read?

APPENDIX G

PEPBL: Methodology working paper 6: Flanders Interaction Analysis

Introduction

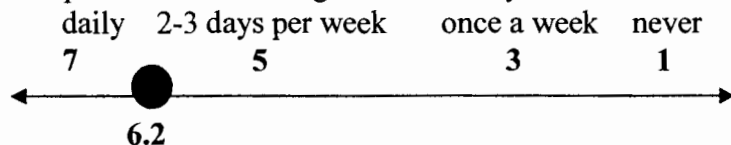
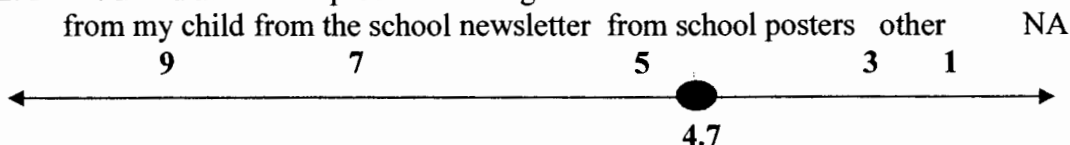
Flanders Interaction Analysis is a system of classroom interaction analysis. The system in its original and modified forms have been used extensively in classroom observation studies (Wragg, 1999). It has also been used in the study of differences between expert and non-expert PBL tutors at University of Michigan Medical School (Davis et al 1992). It is a system for coding spontaneous verbal communication. The system has two primary uses, Firstly to provide evidence of difference in teaching patterns that distinguish one curriculum from another and secondly it can also provide data which may help to explain why differences in learning outcomes appeared or failed to appear. They system will be used for both purposes in the PEPBL study.

The Flanders Interaction Categories (FIAC) consist of 10 categories of communication which are said to be inclusive of all communication possibilities. There are seven categories used when the teacher is talking and two when the pupil is talking (see table 1 for details of each category). Because the system is totally inclusive coding at a constant rate allows calculation of the proportion of time in one or more categories.

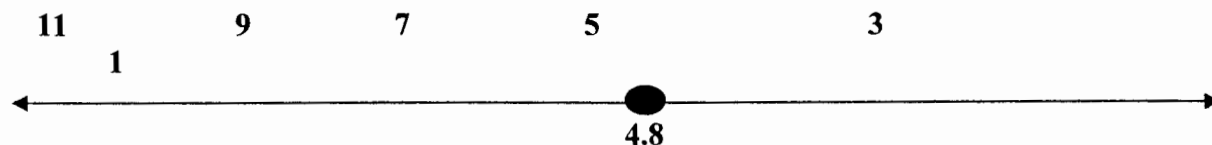
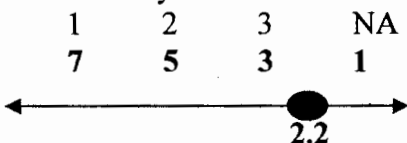
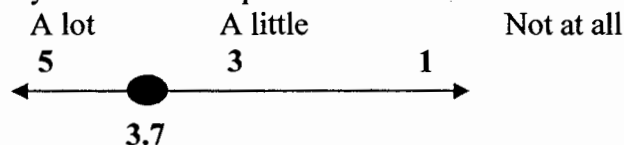
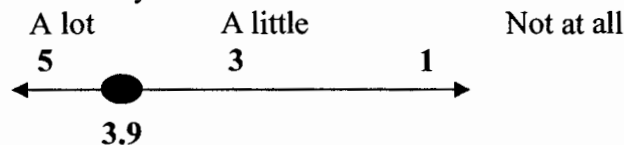
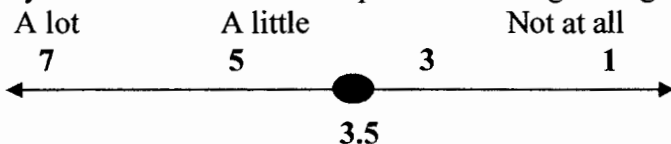
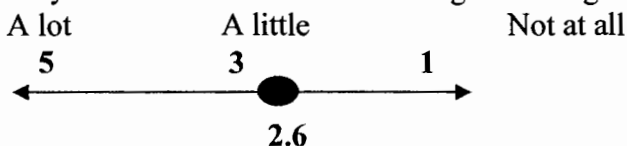
Table 1: Flanders' Interactions Analysis Categories (FIAC)

Teacher-talk		1. Accepts Feeling. Accepts and clarifies an attitude or the feeling tone of a pupil in a non threatening manner
	Response	2. Praises or encourages. Praises or encourages pupil action or behavior. Jokes that release tension, but not at the expense of another individual; nodding head, saying um, hmm or go on are included.
		3. Accepts or uses ideas of pupils. Clarifying, building or developing ideas suggested by a pupil. Teachers' extensions or pupil ideas are included but as teacher brings more of his own ideas into play, shift to category five.
		4. Asks questions. Asking a question about content or procedures; based on teacher ideas, with the intent that the pupil will answer.
	Initiation	5. Lecturing. Giving facts or opinions about content or procedures; expressing his own ideas, giving his own explanation or citing an authority other than a pupil 6. Giving directions. Directions, commands or orders to which a student is expected to comply.
		7. Criticizing or justifying authority. Statements intended to change pupil behavior from non-acceptable to acceptable pattern; bawling someone out; stating why the teacher is doing what he is doing; extreme self-reference
Pupil Talk	Response	8. Pupil-talk - response. Talk by pupils in response to teacher. Teacher initiates the contact or solicits pupil statement or structures the situation. Freedom to express own ideas is limited.
	Initiation	9. Pupil-talk – initiation. Talk by pupils that they structure
Silence		10. Silence or confusion. Pauses, short periods of silence and periods of confusion in which communication cannot be understood by the observer.

APPENDIX H

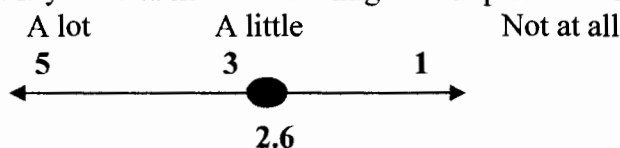
Mean Scores of Central Middle School Reciprocal Teaching Survey**H-1. I spend time discussing home with my child.****P-2. I have heard about Reciprocal Teaching.****P-3. My understanding of Reciprocal Teaching is**

very clear somewhat clear a little fuzzy I don't understand RT I haven't heard about
RT NA

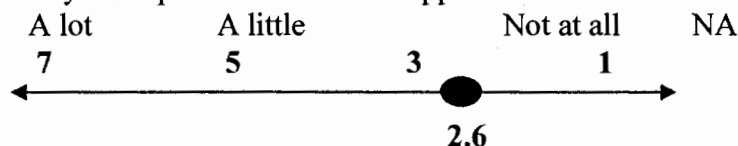
**P-4. How many teachers have discussed Reciprocal Teaching with you?****H-5. My child asks me questions about his/her homework.****H-6. I talk to my child about the books she/he is reading.****P-7. My child has discussed Reciprocal Teaching strategies with me.****RT-8. My child has talked about working in small groups within the classroom.**

APPENDIX H

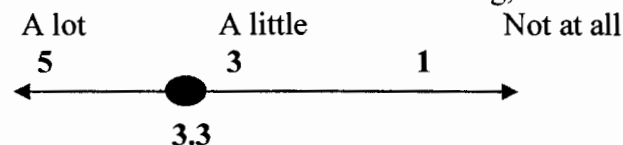
RT-9. My child talks about making mental pictures when he/she reads.



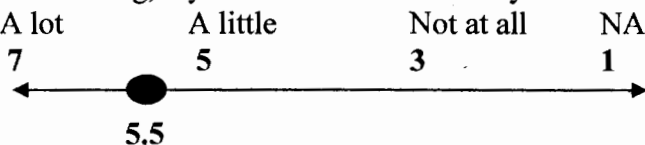
RT-10. My child predicts what will happen to the characters in her/his novels.



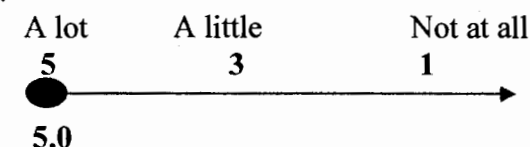
RT-11. I have seen evidence of summarizing, either verbalizing or writing.



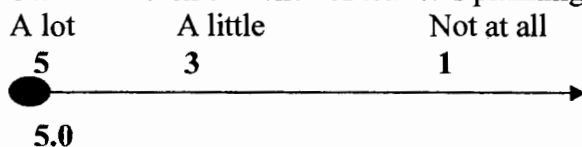
RT-12. I have seen evidence that if my child is having difficulty understanding what he/she is reading, my child will continue to try to make sense of what he/she is reading.



TC-13. I believe teachers should work together to provide the best education for my child.



TC-14. I have seen evidence of teachers planning and working together.



P-15. Reciprocal Teaching can enhance my child's learning.

